

REMARKS

Claims 1-3 and 5-20 were examined and reported in the Office Action. Claims 1-3 and 5-20 are rejected. Claims 2-3 are canceled. Claims 1 and 5-20 are amended. New claim 21 is added. Claims 1 and 5-21 remain.

Applicant requests reconsideration of the application in view of the following remarks.

I. **35 U.S.C. § 103(a)**

It is asserted in the Office Action that claims 1-3 and 5-20 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 6,414,669 issued to Masazumi ("Masazumi") in view of U.S. Patent No. 6,373,457 issued to Kim et al. ("Kim"). Applicant respectfully traverses the aforementioned rejections for the following reasons.

According to MPEP §2142 "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." (In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Further, according to MPEP §2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).)" "*All words in a claim must be considered* in judging the patentability of that claim against the prior art." (In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added).

Applicant's claim 1 contains the limitations of "[a] method of driving an LCD, comprising: providing an array of pixels; providing cholesteric liquid crystals arranged between spaced transparent substrates; providing a reset pulse and a plurality of selection pulses, the reset pulse selected from a group consisting of a pipeline and non-pipeline arrangement, the selection pulses comprising amplitude modulated selection pulses of variable amplitudes of determined pulse width to provide multiplex addressing resultant driving waveform(s)."

Applicant's claimed invention includes multiple selection phases and multiplex address driving waveforms to provide a darker focal conic state and more freedom in gray scale generation and optical contrast ratio. Further, Applicant's amended claim 1 contains the limitations of "the selection pulses comprising amplitude modulated selection pulses of variable amplitudes of determined pulse width to provide multiplex addressing resultant driving waveform(s.)"

Masazumi discloses a method for driving a liquid crystal display (LCD) having a liquid crystal layer exhibiting a cholesteric phase. Masazumi does not address the problem of power dissipation nor that reduction in voltage requirements are required or even desired. Masazumi does not teach, disclose or suggest overcoming the problem with gray scale, nor a driving scheme having a reset pulse and a plurality of selection pulses as seen in Figure 25 and 31 illustrating one select pulse in each line (each row waveform). This is distinguishable from Applicant's claimed plurality of selection pulses. Masazumi discloses an LCD driving technique with a "reset period" and a "scanning period." The "reset period" in Masazumi is used to switch the liquid crystal material into a focal conic state (Masazumi, example 7 at column 23 to column 24). Distinguishable, Applicant's claimed invention uses the "reset pulse" to reset the liquid crystal material into the planar state or the focal conic state. Masazumi does not mention problems with the focal conic state. Further, Masazumi does not mention what will happen to the optical performance when there is a plurality a select pulses in the "scanning period" so there would be no suggestion of any benefit in pursuing the improvement as asserted in Applicant's amended claim 1.

Applicant's Figures 7 and 8 illustrate the plurality of selection pulses in each row waveform. The row waveform includes a reset pulse and a select pulse. A select is followed by smaller deselect signals. A person of ordinary skill in the art would recognize that a select pulse is a pulse of larger voltage, which is used to control the state of a pixel (i.e., bright or dark). Deselect signals are well known in the art (see Masazumi, column 11). As deselect pulses are smaller, in the sake of clarity, Applicant has not illustrated the deselect signals in the figures.

Further, it is asserted in the Office Action that Masazumi does not disclose the multiplex address driving waveform of Applicant's claimed invention. Simply put, Masazumi does not teach, disclose or suggest "the selection pulses comprising amplitude modulated selection pulses of variable amplitudes of determined pulse width to provide multiplex addressing resultant driving waveform(s)." And, Applicant notes, for example, Figure 9 and the description of Figure 9 in the application as filed, which highlight the multiple selection pulses of the claimed invention on a single line or driving waveform.

Kim discloses a driving method for a LCD using liquid crystal having a bistable twisted nematic property to become DC Free. Kim does not teach, disclose or suggest combining multiple selection phases and multiplex address driving waveforms to provide a darker focal conic state and more freedom in gray scale generation and optical contrast ratio. There are no teachings or suggestions addressing the problems with gray scale as recognized by Applicant's claimed invention.

Further, the waveform disclosed in Kim is distinguishable in that one complete driving waveform consists of two frames (see Kim, column 2, lines 30-35). The first frame signal is the row waveform including one reset pulse and one selection pulse. (Kim, column 2, lines 37-40). The second frame signal is merely a reverse polarity of the first frame signal. Therefore, in Kim it is disclosed that the sequence is reset - select

inverted reset – inverted select. In Applicant’s claimed invention, however, a driving waveform is provided by one reset pulse and a plurality of selection pulses. And, Kim does not teach, disclose or suggest “providing a reset pulse and a plurality of selection pulses, the reset pulse selected from a group consisting of a pipeline and non-pipeline arrangement, the selection pulses comprising amplitude modulated selection pulses of variable amplitudes of determined pulse width to provide multiplex addressing resultant driving waveform(s).”

Additionally, Applicant’s amended claim 1 contains the limitations of “the selection pulses comprising amplitude modulated selection pulses of variable amplitudes of determined pulse width to provide multiplex addressing resultant driving waveform(s).” This limitation asserts the details of the multiplex address driving waveform provided by the selection pulses. This feature provides benefits and distances the invention further from Kim. As disclosed in Kim (column 2), Kim asserts the aim and object of the invention, which is clearly distinguishable from Applicant’s claimed invention. Kim also asserts a second “select” pulse and highlights that the second pulse is used only for the purpose of making the display “DC free.” There is no other teaching, disclosure or suggestion in Kim that other benefits could arise from use of a second select pulse. Nor is there even a teaching towards the possibility of using a second select pulse for achieving other benefits or stability in the system. Applicant’s claimed invention asserts a plurality of select pulses, and is not directed to making a display “DC free.” Applicant has conceived the options available from a second or further select pulse(s) on a driving line of a driving waveform. The concept resulted in unexpected benefits that include providing improvement in the darkness of the focal conic states. This in turn provides a higher contrast ratio in the display.

If the teachings of Masazumi and Kim were combined, the resulting invention would still not teach, disclose or suggest all of Applicant’s claimed limitations, as listed above. To take the multiple driving waveform of Kim and combine it with the device disclosed by Masazumi would not make sense as power dissipation is not mentioned as a problem in Masazumi, nor was it taught or suggested that a reduction in voltage requirements is required or desired. And, a combination of Masazumi and Kim would

still not address the problems with gray scale as recognized by Applicant's claimed invention. Additionally, if the frame inversion driving scheme of Kim were combined with the single reset pulse and single selection pulse of Masazumi, the result would be a driving waveform of two reset pulses having a sequence of reset – select – invert reset – invert select. This pulse sequence, however, effectively provides only one selection pulse as the optical performance after the first select pulse is erased by the reset pulse of the second select pulse. That is, the optical performance history after the first select signal will have no effect on the optical performance after the completion of the entire waveform sequence.

Moreover, by viewing the disclosures of Masazumi and Kim, one can not jump to the conclusion of obviousness without impermissible hindsight. According to MPEP 2142, [t]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention 'as a whole' would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the 'differences,' conduct the search and evaluate the 'subject matter as a whole' of the invention. The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." Applicant submits that without first reviewing Applicant's disclosure, no thought, whatsoever, would have been made to "providing a reset pulse and a plurality of selection pulses, the reset pulse selected from a group consisting of a pipeline and non-pipeline arrangement, the selection pulses comprising amplitude modulated selection pulses of variable amplitudes of determined pulse width to provide multiplex addressing resultant driving waveform(s)."

Since neither Masazumi, Kim, nor the combination of the two disclose, teach or suggest all the limitations contained in Applicant's claim 1, as listed above, there would

not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's claim 1 is not obvious over Masazumi in view of Kim since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from claim 1, namely claims 5-20, would also not be obvious over Masazumi in view of Kim for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejections for claims 1-3 and 5-20, are respectfully requested.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending, namely claims 1 and 5-21, are in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666. If a telephone interview would expedite the prosecution of this Application, the Examiner is invited to contact the undersigned at (310) 207-3800.

PETITION FOR EXTENSION OF TIME

Per 37 C.F.R. 1.136(a) and in connection with the Office Action mailed on September 20, 2004, Applicant respectfully petitions Commissioner for a three (3) month extension of time, extending the period for response to March 20, 2005. The Commissioner is hereby authorized to charge payment to Deposit Account No. 02-2666 in the amount of \$1,020.00 to cover the petition filing fee for a 37 C.F.R. 1.17(a)(3) large entity. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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By:

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Dated: March 18, 2005

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on March 18, 2005.

Jean Svoboda